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ABSTRACT

The constructs of cognitive-developmental psychology are applied in this study to the practice of teacher education with the objective of creating a developmental learning environment designed to stimulate personal/professional growth and cognitive structural change on the part of the teacher. The 37 inservice elementary and secondary school teachers and other support personnel involved in the study participated in a summer workshop and fall practicum that were geared toward teacher psychological development in the stages of ego, moral, and conceptual growth. Pretest and posttest measurements were administered, and analysis indicated that the inservice program did facilitate growth in ethical reasoning and conceptual complexity. The inservice experience did not appear however to impact the most general level of ego development. Results suggested as well that it is more difficult to create effective developmental experiences for adults than for children. (DS)

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Developing Models of Teacher Development

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In recent years there has been increasing concern over the effectiveness of inservice teacher education programs. After observing schools in action, Goodlad and Klein argue that "For the schools to change, the people in them must change." (Goodlad & Klein, 1974, p. 117) Mann echoes the charge in his paper on the politics of training teachers in the schools saying that "In the recent past, it has been relatively easy to effect school reform through teacher turnover and recruitment...School reform must now be accomplished through existing personnel. More than ever before, those who seek to change schools must change teachers while they are working in the schools." (Mann, 1976, p. 323) The challenge of changing teachers involves the complex task of facilitating change in human behavior. "Changing the behavior patterns of adults is a task of formidable dimension, expecially when present patterns have been carefully taught through a long structured system of schooling and are endorsed and protected by that system." (Goodlad & Klein, 1974, p. 102)

Numerous in-service teacher education programs have been developed in response to this need to influence teacher behavior. Nevertheless, the results of a massive national review of in-service teacher education by Joyce, Howey and Yarger provide a discouraging account of most of these programs. Their study included a review of some 2,000 volumes, 600 journal articles and major position papers along with interview data for more than 1,000 school personnel, community, congressional and state department members. The findings reported are clearly negative, describing the in-service teacher education programs as "weak, impoverished" and as "relative failures." In response to the accepted approaches to reeducating teachers, it has been suggested that "It is as if we do not expect anything to happen anyway so we just go through the established rituals." (Goodlad & Klein, 1974, p. 102) The

literature does indeed characterize in-service programs which typically expose teachers to new ideas or teaching strategies through lectures, courses or skill development workshops as episodic and largely ineffective.

These conclusions mirror the state of the art of teacher education in general. In 1974 major literature reviews (Getzels and Jackson, Cyphert and Spaights and Biddle and Ellena) characterized the research on teacher personality, effectiveness and training as confusing, often of poor quality, largely atheoretical, and not showing clear and consistent developmental trends. Additional studies on the current impact of student teaching programs generally demonstrate that the process itself produces negative outcomes (Sorenson and Halpert, 1968; Matthews, 1967; Hoy, 1967; Iannaccone, 1963). Teachers in training typically become more authoritarian, bureaucratic, restrictive, custodial and arbitrary by the end of their practice teaching. Ryan (1975) commented in a recent NSSE yearbook that "Teacher education has burst its bounds and...is embedded in our institutions of higher education in such a way that little serious improvement is possible." This same theme on the problems and difficulties which appear almost endemic to teacher education was commented on by Goodlad and Klein who stated after reviewing findings of their study of life behind closed doors in the classrooms of this country "There is no point in continuing to tinker with teacher education programs. They must be revamped from top to bottom." (Goodlad & Klein, 1974)

In our view, a major source of difficulty in teacher education has been the lack of coherent theory and practice to promote teacher development. One of the difficulties in developing theory stems from the fact that educators themselves cannot agree on the nature of effective teaching.

Consequently, we are lacking both an adequate conception of the goals of teacher education, as well as a system of instruction to achieve these goals. Without a systematic framework and theory we proceed without an adequate set of explanations or hypotheses to test. The result is a non-cumulative knowledge base for the profession and practice is subject to fads and folk wisdom. A variety of researchers have argued that one of the major obstacles in refining educational practice stems from the fact that the development of theories of teaching has been neglected. (Shutes, 1975; Glaser, 1976; Gage, 1972)

The current study is one attempt to bridge the gap between the theory of psychology and the practice of teaching and has applied cognitive-developmental theoretical constructs in the design and implementation of a program to promote the personal and professional growth of in-service teachers. It is our contention that an in-service education program must include a conceptual framework that comprehends theory for practice in teacher education. We are seeking theory relevant to practice. Where the relationship would be logical and direct and where the empirical results could be translated back to theory without employing either magical thinking or a theoretical deus ex machina.

Directing Constructs: A Developmental Approach

In this study we have applied the constructs of cognitive-developmental psychology to the practice of teacher education. Our goal to create a developmental learning environment designed to stimulate the personal/professional growth or cognitive structural change on the part of the teacher reflects our feeling that development as an aim of education offers an enlightened framework for the field of teacher education.

The rationale for development as the aim of education has been

advocated by Dewey (1938), Piaget (1970), and Kohlberg (1975). According to Dewey, (Kohlberg, 1971):

> Only knowledge of the order and connection of the Stages in the development of the physical functions can insure the full functioning of the psychical powers. Education is the work of supplying the conditions which will enable the psychical functions, as they successfully arise, to mature and pass into higher functions in the freeist and fullest manner (p. 454).

At higher stages an individual functions more abstractly, complexly, comprehensively and empathically. Higher stages of development are considered more adequate and desirable since theoretically they encompass more perspectives and allow for more empathic role taking and adequate problem solving. "Development defined in this way is obviously very important for teachers as they work to promote growth and learning in their students, as they continue to grow personally and professionally, and as they participate in regenerating both the educational ends for their schools and the means for reaching these ends." (Witherall, 1978, p.32)

Cognitive-developmental theorists describe development in terms of stages. They have all developed schemes through which they attempt to show how cognitive or conceptual systems change and develop from childhood through adolescence and adulthood. Piaget uses the phrase "schema" to describe stages of development showing the progression from concrete to formal operations. Kohlberg describes stages of moral development showing changes from pre-conventional to principled thinking. Harvey, Hunt and Schroder describe conceptual levels as belief systems ranging from a concrete, absolutist system to an abstract or integrated and differentiated system. Loevinger defines stages of ego development progressing through the course of normal development from the pre-social or autistic to the autonomous and integrated stage. Even though none of these concepts are synonomous, there is considerable theoretical overlap.

Cognitive developmental theorists share a particular set of assumptions and central constructs. These models describe what sorts of knowledge and thinking processes one might expect learners at various stages of development to use. The framework shared by these theorists conceptualizes the individual in terms of his thought processes. Rest (1973) lists the three central ideas which form the basis of cognitive-developmental theories. These central ideas are 1) structural organization, 2) developmental sequence and 3) interactionalism.

Structural Organization. The aspect of behavior of greatest interest to the cognitive-developmentalist is a person's basic problem-solving strategies and structural organization. This involves 1) the stimuli the individual attends to, 2) the way the individual conceptualizes or categorizes the stimuli he comprehends, 3) the rules and integrating principles the individual uses to make sense out of his experience to solve problems and to make decisions. Cognitive structures are internalized conceptual frameworks and problem solving strategies. The individual's conceptual framework will be the mediating structure which determines how the individual will translate external reality.

Developmental Sequence. Cognitive developmentalists have defined developmental stages as having the following stage characteristics:

1) Each stage is qualitatively different in structure from the preceding stage,
2) The different structures form an invariant sequence in individual development,
3) Each of these different and sequential modes of thought forms a structural whole,
4) Stages are hierarchical integrations (higher stages reintegrate the structures found at lower stages.)

Development is viewed as progression through an invariant sequence of hierarchical stages with each stage representing a qualitatively different way of thinking. The goal of development is toward higher stage thinking which represents more adequate and complex ways of processing information.

Interactionalism. Development occurs through the individual's existing cognitive structure so that he will discover more adequate ways to make meaning of experiences. The role of the environment is crucial in creating the dissonance or disequilibrium which forces the individual to alter his cognitive structure to admit more complexity in order to resolve the disequilibrium with which he is confronted.

It is important to note that although the sequence of stages postulated by developmental theorists are not identical, there are many recurring similarities among them. Loevinger, describing the general similarities of the different stage theorists stated,

> "All of the conceptions project an abstract continuum that is both a developmental sequence and a dimension of individual differences in any given age cohert. All represent holistic views of personality and see behavior in terms of meaning or purposes... All are more or less concerned with interpersonal relations and with cognitive pre-occupations including self-concept."

In summary, the cognitive-developmental theorist assumes that the individual's actions are governed by an internal mediating cognitive process, that the quality of such mediation will vary by age and stage of development and that at higher stages the individual will function more comprehensively and empathically. Such a broad conception presumes that development is not value-free or relative. The higher more complex stages of thinking and valuing are not separate and represent complimentary educational goals.

From Developmental Theory to Educational Practice

The work of O. J. Harvey (1966) and David Hunt and Bruce Joyce (1967)

have recently provided a key empirical and theoretical bridge connecting developmental concepts to classroom teaching. They were able to document through natural setting research that teachers at higher stages of development functioned in the classroom at a more complex level.

With regard to the teaching function, Harvey defined four stages of conceptual functioning through his Conceptual Systems Test (1966). Several studies have used this measure (CST) to establish the relationship between conceptual systems and teaching style. Murphy and Brown (1970) found that the amount of information handled by helping students to think divergently, theorize and engage in self-expression increased with each teacher stage, while asking rote questions decreased with conceptual level. Similarly, with increasing teacher abstractness, sanctioning of search behavior and less reinforcement of attainment behavior was seen. Hunt and Joyce (1967) found significant positive correlations between indices of reflective teaching (use of the learner's frame of reference to plan, initiate and evaluate performance) and conceptual level. Teachers at higher conceptual levels could "radiate" a greater variety of learning environments, or more simply, could employ a variety of so-called models of teaching. Harvey (1966) found that students of system 4 teachers (high C.L.) were more cooperative, active and involved in their work, higher in achievement and less nurturance seeking than their counterparts in classrooms with teachers who used more concrete belief systems. In summary, these studies suggest that high stage teachers tend to be adaptive in teaching style, flexible, and tolerant, and able to employ a wide range of teaching models. Harvey (1966) found that students of system 4 teachers (high C.L.) were more cooperative, active and involved in their work, higher in achievement, more helpful and less dependent than students in classrooms with teachers of lower C.L. These findings can

be linked to some similar emerging trends in cognitive developmental theory.

In the area of moral/ethical development, Kohlberg's work (1969) clearly suggests that teachers at higher developmental stage levels are more effective in professional functioning. Research studies have shown strong relationships between ethical level and role-taking (taking another's perspective), empathy, principled thinking, and ability to withstand stress—all important teaching behaviors. Loevinger's work (1976), also strongly supports the idea that interpersonal functioning (ego development), can be represented by a series of stages and that more advanced stages are characterized by increased flexibility, differentiation, tolerance for conflict and ambiguity, and conceptual complexity, all of which appear to be highly desirable characteristics for teachers. Most important is the relationship between higher stages of ego development and more complex human functioning. Effective teaching in almost any view is a most complex form of human behavior. A key assumption is that functioning at such complex levels requires a relativity high stage of ego, moral and conceptual development. The research base supports this assumption.

Thus the work in developmental theory and practice from a variety of perspectives has powerful implications for teacher education. Teachers at higher more complex stages of human development appear as more effective in classrooms than their peers at lower stages. The unanswered question, in this area is perhaps obvious. If there is strong support for the idea that teachers at higher developmental levels are more effective in managing classrooms, then can we create an educational program designed to promote such development? In a Dewey sense, can we stimulate teacher growth to higher stages of development? The current study represents an attempt to apply such a Deweyian concept to in-service teacher education.

If, theoretically we know (in an approximate sense) what development is, then perhaps we also know what development ought to be, namely to create educational programs which will stimulate such growth to more complex levels of human functioning.

The Developmental Education Model

A curriculum based on developmental theory and practice was designed for the in-service teacher education program. The initial in-service training and staff development model was developed by Bernier and Sprinthall (1966) at the University of Minnesota. A follow up study with added curriculum components was designed and implemented by Oja and Sprinthall the following year. The interventions were designed to directly impact the cognitive/moral developmental level of classroom teachers and thus were deliberate attempts to promote positive movement through the developmental stages of personal and social growth. The curriculum represents as adaptation and extension of the Mosher-Sprinthall (1971) Deliberate Psychological Education model.

The Mosher-Sprinthall Deliberate Psychological Education model attempts to apply the theoretical constructs from developmental psychology to educational practice. The theory of developmental psychology suggests that role-taking opportunities and experiences which create disequilibrium are instrumental in stimulating developmental growth. Conditions which facilitate movement to higher stages of thinking included sustained responsibility for the welfare of others and the experience of moral choices combined with reflection and integration of experiences. The necessary educational conditions which are requisite to promote developmental growth (role-taking, disequilibrium, reflection) were integrated into the curriculum in order to maximize sources of gain. "An environment was created that enabled the teachers to assume a position of responsibility

in an atmosphere of shared leadership or colleagial relationships where one must take the perspective of others in making choices and also regularly examine these decisions and relationships." (Bernier, 1976, p. 182) Theoretical constructs suggested to us that new role-taking opportunities along with conditions of conflict were necessary to "stretch" teachers thinking of themselves both personally and professionally. The focus was on resolving in a systematic fashion the personal as well as the professional issues confronting the teachers throughout the workshop experience. Personal development is seen as a legitimate and necessary component of the professional training program.

Teachers were encouraged to experience a variety of new roles for themselves. New activities in the classroom demanded they assume teaching roles which included facilitative teacher (active listener, empathic responder), resource person, counselor, supervisor and indirect teacher. These new experiences were followed by intense reflection so that teachers could confront old assumptions in light of new learning and in turn realize the need for new perspectives and behaviors to deal effectively in a variety of learning environments.

Dewey claims that an emotionally engaging experience must be followed by analysis of the experience if qualitative changes in developmental level are to occur. Developmentalists emphasize the role of the environment in creating disequilibrium and point out that too much disequilibrium can become overwhelming resulting in fixation at a stage rather than progression to the next stages (Maves, 1972). Thus, it is imperative to emphasize that role-taking, reflection and support were all central elements of the curriculum.

The Curriculum

The objectives of the curriculum in the affective domain were

1) the development of a more complex, differentiated and integrated understanding of self and others, 2) increased cognitive complexity, 3) growth toward principled autonomy and 4) the development of more complex ethical reasoning. One vehicle for facilitating development was a curriculum which provided a supportive and challenging environment with opportunities for role-taking, empathic responding and personal reflection.

The objectives in the behavioral domain were 1) an increase in knowledge of educational psychology, 2) the development of communication skills, 3) the development of supervision skills, 4) the development of strategies to enable the teacher to assume a variety of teaching roles.

Teachers, counselors and social workers from elementary and secondary schools participated in the program. The program involved two main segments. The teachers first took part in an intensive six-week summer workshop at the University campus. Then, during the fall quarter these teachers returned to the classrooms to implement the curriculums they had developed during the summer. During the fall they also met in weekly supervision seminars to reflect on their classroom practice.

The time spent in the summer workshop involved participants four days a week from 8:30 to 12:00. Each class was divided into large and small group sessions. "The large group relied heavily on didactic learning (lectures and discussions) specifically relating principles and theories of human development (Elkind, Erikson, Loevinger, Hunt, Kohlberg, Piaget, Perry) and principles of behavioral contracting to adults' personal development, social roles and educational practice in classrooms (including individualizing instruction and mainstreaming)." (Oja and Sprinthall, 1978, p. 123) Small group sessions focused on learning and practicing skills in counseling, indirect teaching, behavioral contracting and group facilitation with an emphasis on issues relevant to the personal and

professional development of the teachers involved.

The summer workshop provided instruction in theory as well as practice in skill training. The emphasis was on understanding both the self and others from a developmental perspective. At the same time there was a focus on acquiring the skills necessary to create learning environments which would facilitate development through the stages. The "Counseling skills" component of the workshop involved teachers in role-taking activities where they practiced active listening and empathic responding. The objectives included: to accurately identify feelings and content in counseling relationships, to accurately "read" non-verbal behavior in self and others, and to send and receive "I" messages. The "Supervision Skills" component involved teachers in activities critiquing videotapes (Kagan's Interpersonal Process Recall Method, 1975), and analyzing teaching through the Flanders interaction categories, particularly the four components on indirect-teaching. As teachers critiqued their own as well as their peers methods of counseling, there was an emphasis on learning to both give and receive feedback in a constructive manner. We felt it was crucial that teachers develop skill in this area since they would be supervising some of their own students in cross-age and peer tutoring when they returned to their own classes in the fall. The "individualizing instruction" component involved teaching the teachers some of the behavioral management techniques or "precise teaching" methods.

During the fall quarter the teachers returned to their classrooms where they implemented the units on counseling skills, supervision skills and individualizing instruction that they had developed during the summer workshop. The instructional staff from the University visited the classroom each week initially to encourage and work with the teacher in implementing the new curriculum and later to do more systematic observations and provide feedback to the

teachers. Teachers also met in small groups for two hours one day per week. Typically the first hour of the seminar was spent in discussion of the personal and professional issues which the teachers themselves were confronting either in their classroom practice or in their personal lives. The second hour teachers spent supervising one another through critiquing videotapes of each other in the natural setting. This structure provided the opportunity for teachers to integrate the summer experiences and to apply their new knowledge in significant personal and professional relationships. Again, the developmental education support-challenge, action-reflection model was implemented so that teachers had on going support and supervision in implementing the skills of counseling, supervision and individualizing instruction in their classes. They examined new experiences in a group where reciprocity and role-taking were encouraged. This aspect of the curriculum seems to be of particular significance in light of the sense of isolation and alienation often expressed by teachers. The pressures of the teachers work, the structure of the school day and the general climate in the schools often create an environment where the teacher has little contact with colleagues. There is tremendous potential for growth when teachers meet in seminars and define for themselves the personal and professional issues to be discussed.

Design and Methodology

Participants for the study were 37 in-service elementary and secondary school teachers and other support personnel (counselors and social workers) who were involved in the summer workshop and fall practicum. The experimental subjects (N=37) participated in the Developmental Education Workshop offered for regular graduate credits. The control subjects (N=25) were enrolled in various other summer school education courses. The instructional staff consisted of six doctoral students and three faculty members in the Developmental Education Program at the University of Minnesota. The graduate students had

primary responsibility for organizing and facilitating the small group meetings and for organizing the fall practicum including the on-site supervision and weekly seminar meeting. The faculty professors had primary responsibility for organizing and presenting lectures and discussions for the large group meetings.

The study used a series of formal and informal measures to assess the independent variable, personal psychological development in the stages of ego, moral and conceptual growth. Since no single tool or scoring approach was adequate to cover the multi-dimensions or structural growth, the study administered a variety of pre and post measures. The formal measures, administered to both the experimental and control groups, included the Defining Issues Test (Rest) as an estimate of ethical development, the Sentence Completion Test (Loevinger) as an estimate of personal development, and Conceptual Level Test (Hunt) as an estimate of cognitive complexity and learning style. This combination of measures allowed for a finer focus on the changes that did occur.

The Results

Evaluation of this curriculum followed a pretest-posttest non-equivalent comparison group design and employed a formative model of evaluation. Assessment of the main effects of the study were estimated from pre to post-test changes on three measures of psychological development. Measures were also used for the experimental group only to assess skill development and participants' journals were used to assess their experiences. The following findings and tables are reported by Oja in her 1978 description of the study.

Ego Development

Table I indicates the results of independent T-tests comparing the mean ego level score of the experimental to the control group on both pre and post tests.

Oja (1978) reports that the Experimental Group mean was significantly different from the control. A one-tailed test of significance was employed since developmental theory predicts direction for change. The computed post test t was 1.70 and with 53 NDF this was significant beyond the .05 level. Close inspection indicated the source of significance results primarily from the decrease on post test scores by the control group rather than by an increase in scores of the experimental group. It appears that the experimental group remained relatively stable while the control group regressed in scoring. Since the Loevinger test purports to measure the most basic "master trait" in developmental terms we may conclude that the workshop did not impact the most general level of developmental functioning. The pre-post differences that we noted do not indicate major shifts in development but may at best be considered a trend in the direction of positive change.

The test scores identified the teachers at stage 3/4 and 4 of ego development. The 3/4 subject is characterized by conformity to external rules, preoccupation with appearance and social acceptability, concern with belonging, helping and superficial niceness and a cognitive style reflecting conceptual simplicity and use of stereotypes. The shift from stage 3/4 to 4 is from the conformist stage with little awareness of feelings toward greater self awareness, differentiation of feelings, self respect and inner directedness. The stage 4 individual is characterized by self-evaluated standards, long-term goals and ideals, and an inter-personal style which is intense, responsible and reflective of maturity and a concern for cooperation and trust.

Moral Ethical Development

The Defining Issues Test (an objective measure of Kohlbergian Moral Stage) attempts to assess the subjects level of moral judgment by presenting

a moral dilemma and having subjects rank order the importance of major issues involved in deciding what ought to be done. Each statement represents a moral judgment stage and a subject's choices of the most important issues over a number of dilemmas are used to determine the subjects grasp of different stages of moral reasoning. The P (Principled Thinking) score is the sum of the subjects Stage 5A, 5B and 6 usage scores in Kohlbergian terms.

Table 2 indicates that there was no significant difference between the two groups on the DIT pretest. The two groups were significantly different on post test scores (18.3 versus 14.9).

The overall results indicated that scores on amount of "principled thought" increased significantly from a mean pretest percentage score of 56.3 to a mean post test percentage score of 62.0. The experimental subjects demonstrated statistically significant increases in their ability to reason at high ethical and abstract levels on issues concerning geniune human dilemmas. The control group results indicated no significant change from pre to post-testing on the Defining Issues Test.

Conceptual Development

The Conceptual Level Scores which measure cognitive complexity as well as learning style range from 0 to 3. The test is a six-item paragraph completion test, similar in format to the Loevinger. Higher scores indicate more complexity in processing information, greater interpersonal maturity and a learning style requiring less structure.

The results on Table 3 indicated there were no significant differences between the Experimental and Control groups on mean pre-test scores. Post test scores revealed a statistically significant difference ($p=.013$) indicating the post test experimental mean CL score was significantly higher than that of the comparison group.

In summary, the analysis of the pre-post difference on the developmental measures indicate that the in-service program did facilitate growth in ethical reasoning and conceptual complexity as reflected in significant gains on the Defining Issues Test and the Conceptual Levels Test. The in-service experience did not appear however to impact the most general level of ego developmental functioning as measured on the Loevinger Sentence Completion Test. In interpreting these findings, Oja and Sprinthall suggest that the workshop may not have been long or intense enough to promote a major shift from Stage 4 to 5.(Oja & Sprinthall, 1978, p. 128) Mosher (1977) suggests that in order for such a major shift to occur there needs to be a major change in the entire educational environment, including how the school as a system is organized.

Teachers were also pre and post tested on measures assessing performance in communication skills which was considered a central component of the counseling and supervision training. Table 4 represents the reflection of feeling scores which measures ability to accurately identify and empathically respond to emotions. The results indicate the teachers did learn communication skills during the summer workshop and that their level of performance did not drop significantly after they returned to their own classrooms. When compared to the studies documenting the usual wash-out effect of general communication skills training programs, these results are encouraging.

In addition to these main outcomes other more unobtrusive indices, such as an analysis of the content of the journals and informal measures of actual classroom teaching indicated that the developmental changes measured related consistently to other more behavioral assessments. Perhaps the weekly journals indicated the clearest yet most subjective evidence of the personal growth and development of the teachers participating in the program.

The journal content reflected an increased awareness of self and other in personal and professional interactions. Teachers' discussion of the successes and failures they experienced in implementing the curriculums in cross-age teaching, peer counseling and individualizing instruction indicated a broader perception of their pupils and an increase in their own self-analytic skills. (Oja and Sprinthall, 1978, p. 130)

Conclusions

This research project attempted to confront the complex issues involved in facilitating and measuring the psychological development of teachers participating in an in-service education program. Earlier studies of children, adolescents and pre-service teachers (Glassberg, 1977) suggested to us that a developmental curriculum could promote positive movement through the developmental stages. Programs that define development as the aim of education are subject to a variety of limitations. First, it is difficult to effectively translate principles of cognitive developmental theory to educational practice. The literature has tended to focus on developing rationale for such programs rather than on developing specific instructional strategies to facilitate growth. A lack of sufficient knowledge concerning the actual process of change makes it difficult to develop strategies with precise qualitative or quantitative dimensions which will facilitate development. Second, the rudimentary experimental nature of instruments as estimates of cognitive-structural development suggests that validity of developmental measures is largely concurrent or construct and not predictive. Consequently, to minimize some of the measurement problems it is necessary to employ a variety of measures.

The results of this particular study suggest that it is more difficult to create effective developmental experiences for adults than for children

and adolescents. It seems that adults tend to stabilize at a particular stage of development, to avoid significant change and to interpret new experiences in familiar terms. Therefore, it becomes more difficult to create dissonance producing experiences and/or intense enough reflection in a manner which will facilitate growth.

Both Oja's and Bernier's studies do suggest that teachers can learn theories and skills which to some extent impact their developmental level. Both studies also suggest that effective teaching can be defined largely in developmental terms. Higher stage teachers who are more flexible, creative and adaptive themselves will in turn create more effective learning environments for their students. Since teachers at more complex developmental levels perform the teaching act with greater comprehensiveness and empathy and their pupils evidence higher levels of thinking, self-exploration and independence, it makes sense to design programs for teachers to systematically promote such development

Suggestions for the Future

The Developmental Education Model has a number of characteristics which suggest that it is in fact a most appropriate place to begin in designing and implementing in-service education programs.

Certain elements of the in-service program reviewed are of particular importance for the success of an in-service project. First, the model provided the opportunity for teachers to work in small groups to define their own personal and professional goals. Teachers were also instructed to develop their own curriculum rather than to use any pre-packaged materials. Consequently teachers were able to focus on the problems or aspects of curriculum development where they felt there was the greatest need for change. As Mann had concluded after working on the Rand Corporation Study of the

Office of Education change agent programs: "Successful materials were those which offered early successes and a number of alternate points of entry so that teachers could begin where they felt they needed help." (Mann, 1976, p. 327) Second, the instructional staff from the University worked with the teachers over a six month period and were responsive to the personal as well as the professional concerns expressed by the participating teachers. Staff members were perceived by program participants as both available and supportive which made it possible for the teachers to request and receive help when they encountered difficulties in integrating new theories or implementing new teaching strategies. Also, the collegial model or peer supervision established a climate where it was most appropriate for teachers to engage with one another in developing resources and sharing expertise. Third, the program provided for on-going individual and group evaluation and observation. The individual teachers' work was thoughtfully critiqued in the group, the dynamics of the group process itself was analyzed and the individual teacher was frequently given feedback in private conferences based on the instructor's observations of the teacher in the group seminars and classroom setting. Teachers also worked in dyads observing each other in classroom practice and sharing responses and suggestions with one another. Fourth, during all phases of the workshop teachers were exposed to a variety of models of teaching. In the summer the course was taught by three professors and two instructors. During the fall as teachers analyzed videotapes of one anothers classroom practice they viewed eight or ten individual teaching styles. The Joyce & Showers extensive review of inservice programs concludes that "The more powerful forms of modeling and feedback are probably necessary for the acquisition of complex teaching skills and strategies." (Joyce & Showers, 1978, p. 55)

It appears that the Berquist and Phillips (1975) model for theory and practice of faculty development may point the way for developing more powerful strategies to promote teacher development. Their model describes three related components of faculty development: instructional development, personal development and organizational development. The Developmental Education Model clearly incorporates the instructional development component (such practices as curriculum development, teaching diagnosis and training) as well as the personal development component (activities such as interpersonal skills training). The third component however, organizational development (to improve the institutional environment for teaching and decision making) seems to be the area in which this intervention is weakest. Although an attempt was made to recruit teachers, social workers and counselors from a single high school, there remained a lack of total commitment for change from the educational system as a whole. There is a need for a program which would involve the entire school system in a manner similar to the Mosher and Kohlberg approach to the "just community" high schools. Oja is moving in this direction as she is in the process of adapting the Developmental Education Model to a twelve-cycle Teacher Corp Project at the University of New Hampshire and Portsmouth Junior High. A commitment from a total system has some significant implications. First, as teachers and administrators become involved in aspects of the educational system outside of their traditional domains, there will be opportunities for more significant and responsible role-taking, reflection and interaction. Second, any role changes as significant as the ones being proposed here need support from all major parts of a social system in order to survive.

Table 1

LOEVINGER EGO DEVELOPMENTAL SCORES

(PRETEST, POST-TEST: EXPERIMENTAL VS CONTROL)

Variable	N	Mean	Standard Deviation	Degree Freedom	t	p
Loevinger SC-18						
Pretests:						
Experimental	30	6.867	.681	53		p (two-tailed) [a] NS
Comparison	25	6.720	.678			
Post-Tests:						
Experimental	30	6.900	.662	53	1.70	p (one-tail) [b] .01< p< .05
Comparison	25	6.560	.821			

Ego level	1	2								
Interval Value	1	2	Delta 3	Delta/3 4	3 5	3/4 6	4 7	4/5 8	5 9	6 10

[a] Since the pretesting is designed to assess whether or not the two groups are derived from the same population, a two-tailed test is appropriate.

[b] The post-testing is designed to assess whether the experimental group is higher in score than the control group. In testing a prediction of direction, a one-tail is appropriate.

Table 2

REST DIT SCORES - PRINCIPLED MORAL THOUGHT

(PRETEST POSTTEST: EXPERIMENTAL VERSUS CONTROL)

	Instrument	n	mean score raw	%	sd	df	t	p
	Rest DIT-3							
Pretest	Experimental	27	16.33	(56.3%)[a]	4.56	46	1.81	p(two-tail) NS
	Comparison	21	13.43	(46.3%)	6.59			
Posttest	Experimental	27	18.296	(63.1%)	.959	46	2.06	p(one-tail) .02
	Comparison	21	14.952	(51.5%)	1.372			

[a]to transfer from raw score to % score, divide raw score by 29.

Table 3

HUNT CONCEPTUAL LEVEL TEST

(PRETEST POSTTEST: EXPERIMENTALS VERSUS CONTROLS)

Instrument		n	mean score raw	%	sd	df	t	p
Hunt Paragraph Completion Test								
Pre:	Experimental	31	1.855		.290	52		p (two-tailed)
	Comparison	23	1.696		.372			NS
Hunt Paragraph Completion Test								
Post:	Experimental	31	2.010		.375	52	2.29	p (one-tail) .013
	Comparison	23	1.787		.322			

3 point scale

1 - Categorical judgements, stereotyped thought. Other directed, accepts single rules

2 - Self delineation, awareness of alternatives, awareness of emotions

3 - Abstract internal principles, awareness of multiple viewpoints

Table 4

REFLECTION OF FEELING SCORES
(CORRELATED T: EXPERIMENTAL SUBJECTS ONLY)
(N = 32)

Variable	N	Mean	SD	t	DF	two-tailed Probability	
Experimental							
Time 1 T_1	32	2.003	.601	-7.66	31	.000	*
Time 2 T_2	32	2.691	.482				
Time 1 T_1	32	2.003	.601	-5.75	31	.000	*
Time 3 T_3	32	2.594	.629				
Time 2 T_1	32	2.691	.482	1.29	31	.208	NS
Time 3 T_3	32	2.594	.629				

T_1: beginning of the summer workshop

T_2: end of the summer workshop

T_3: end of the fall practicum

5 point scale for responses
1 = Total lack of awareness of emotions
2 = Awareness but slight distortion of feelings
3 = Accurate identification and response to feelings
4 = goes beyond the stated content and feelings expressed - Leads
5 = goes well beyond expressed feelings - suggests major new awareness to subject

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